with control functions specific to three-dimensional images. Activation areas **22** are in the upper right hand corner while the frame rate is displayed in the lower left hand corner.

[0059] For example, an activation area **22** may contain a graphic symbol indicating horizontal/vertical translation of the image, as exemplified by graphic **70** in FIG. **6**A. When this activation area is touched, it preferably changes to a highlighted state, e.g., by means of a highlighted border or a change in graphic color, and the user may then translate the image horizontally or vertically on the visual field **20** by touching anywhere on the image and dragging. After a short period of no image movement by the user, or if a different activation area is touched, the activation area **22** associated with image translation is automatically un-highlighted by computer **16** and the translation function is disabled. As a further example, an activation area **22** may contain a graphic symbol for image rotation, as illustrated by graphic **72** in FIG. **6**B. When this activation area is touched, it preferably changes to a highlighted state, and the user may then rotate the 3D image about a horizontal or vertical axis in the visual field **20** by touching anywhere on the image and dragging. After a short period of no image rotation by the user, or if a different activation area is touched, the activation area **22** associated with image rotation is automatically un-highlighted by computer **16** and the rotation function is disabled.

[0060] In addition to touchscreen input, the same system display would also allow user input via stylus or other suitable device. So-called dual-mode screens are available today on "ruggedized" tablet PCs. The stylus input would be useful for entering high resolution data, such as patient information via a virtual keyboard or finely drawn region-of-interest curves for ultrasound analysis packages.

[0061] The user interface can also be designed to process handwritten text drawn or traced on the touchscreen by a finger, stylus or the like. To this end, the user interface would include a handwriting recognition algorithm which converts touches on the touchscreen into text and might be activated by the user touching a specific activation area to indicate to the user interface that text is being entered, e.g., an activation area **22** designated "text", with the user being able to write anywhere on the touchscreen. Alternatively, a specific area of the touchscreen might be designated for text entry so that any touches in that area are assumed to be text entry. By allowing for handwritten text entry, the user interface enables users to enter complex information such as patient data, comments, labels for regions of the images and the like. This information would be stored in association with the ultrasound images from the patient.

[0062] The touchscreen user interface described above is particularly suited for small, portable ultrasound systems where cost and space are at a premium. Thus, tablet PCs are ideal applications for the user interface.

[0063] Moreover, ultrasound scanners are becoming very small so that in one implementation of the invention, an ultrasound imaging system includes an ultrasound scanning probe with a standard interface connection (wired or wireless) and integrated beamforming capabilities, a tablet PC with an interface connection to the scanning probe and the user interface described above embodied as software in the tablet PC and with the ability to form the activation areas and display the ultrasound images on the screen of the tablet PC.

[0064] Although the user interface in accordance with the invention is described for use in an ultrasound imaging system, the same or a similar user interface incorporating the various aspects of the invention can also be used in other types of medical diagnostic imaging systems, such as an MRI system, an X-ray system, an electron microscope, a heart monitor system, and the like. The options presented on and selectable by the virtual controls would be tailored for each different type of imaging system.

[0065] Although illustrative embodiments of the present invention have been described herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to these precise embodiments, and that various other changes and modifications may be effected therein by one of ordinary skill in the art without departing from the scope or spirit of the invention.

1. In an ultrasound imaging system, a user interface for providing user control over device functions of the imaging system, comprising:

a touchscreen (**18**);

a segmented activation area (**30**, **42**) defined on said touchscreen (**18**), said segmented activation area (**30**,**42**) including a plurality of activation areas (**32**, **44**) wherein each of said plurality of activation areas (**32**, **44**) has a unique assigned function relating to the imaging system with an indication of said function being displayed on said activation area (**32**, **44**); and

a processor (**16**) coupled to said touchscreen (**18**) for detecting a touch on said activation areas (**32**, **44**) defined on said touchscreen (**18**) and performing the function associated with each of said activation areas (**32**, **44**) upon being touched.

2. The user interface of claim **1**, wherein said plurality of activation areas (**32**, **44**) are arranged relative to one another such that center points of said plurality of activation areas (**32**, **44**) are equidistant from a common point on said touchscreen (**18**), said plurality of activation areas (**32**, **44**) being arranged in a ring around said common point.

3. The user interface of claim **1**, wherein said segmented activation area (**30**) is circular and each of said plurality of activation areas (**32**) has a form of at least a portion of a sector, and said plurality of activation areas (**32**) occupy substantially the entire space of said segmented activation area (**30**).

4. The user interface of claim **1**, wherein said segmented activation area (**42**) is a polygon and each of said plurality of activation areas (**44**) has a form of at least a portion of a polygon, and said plurality of activation areas (**44**) occupy substantially the entire space of said segmented activation area (**42**).

5. The user interface of claim **1**, wherein the function associated with at least one of said plurality of activation areas (**32**, **44**) is display of a submenu (**34**, **46**) of a plurality of additional activation areas (**36**, **38**, **48**), each of said additional activation areas (**36**, **48**) having the form of a portion of a sector and a unique assigned function relating to the imaging system with an indication of said function being displayed on said additional activation area (**36**, **48**).

6. The user interface of claim **5**, wherein said segmented activation area (**30**) is substantially circular, said additional activation areas (**36**, **38**) being arranged adjacent to an outer surface of said at least one of said plurality of activation areas (**32**) such that said additional activation areas (**36**, **38**) have center points equidistant from a center of said segmented activation area (**30**).

7. The user interface of claim **5**, wherein said segmented activation area (**42**) is polygonal, said additional activation areas (**48**) being arranged around a common point such that